DOI: https://doi.org/10.37162/2618-9631-2021-3-150-161

Refinement of land use data for emission calculations in the CHIMERE chemistry-transport model: A case study for the Nizhny Novgorod region / Borisov D.V., Shalygina I.U. // Hydrometeorological Research and Forecasting, 2021, no. 3 (381), pp. 150-161.

The quality of calculating the concentration of pollutants in the chemistry-transport model largely depends on the reliability of used emission data. The possibility of updating the EMEP (European Monitoring and Evaluation Program) emission data using OpenStreetMap geodata for the CHIMERE chemistry-transport model calculations is discussed on the example of the Nizhny Novgorod region. The GlobCover land-use data refinement procedure based on OpenStreetMap information provides a 3.3% increase in the urban area and a more accurate configuration of the emission field as compared to the real distribution of sources of atmospheric emissions. Experimental CHIMERE chemistry-transport model calculations of pollutant concentrations based on the initial and updated emission fields demonstrated the efficiency of the proposed approach.

Keywords: emissions, EMEP, land use, OpenStreetMap, CHIMERE chemistry-transport model, air quality

Tab. 1. Fig. 4. Ref. 14.